Mu2e Accelerator and Beams
Identifcation of Requirements

Definitions:

bunch == group of particles circulating in accelerator
microbunch == group of particles arriving to Mu2e
distributions assume Gaussian, unless noted

Strawman *list of possible parameters:*

Time between microbunches	1685	ns	(fixed)
Transmission Window (centered on microbunch center)	200	ns	
Transmission Window jitter	2	ns	
Extinction Level			
Measurement window:	900	ns	
A = no. particles to target during measurement window			
B = no. particles to target during transmission window			
X =A/B			
Maximum allowed X =	1.00E-07		Is there
Desired X =	1.00E-09		a "max"?
(need specification of an "extinction function" (of time)?)			
Maximum integrated intensity per microbunch on target	70	Mp	
Desired integrated intensity per microbunch on target	35	Mp	
Maximum Time Average dN/dt on target	25	Tp/s	
Desired Time Average dN/dt on target	18	Tp/s	
Minimum Time Average dN/dt on target	10	Tp/s	
(averaged over many seconds)			
Maximum rms transverse spot size on target	3	mm	
Desired rms transverse spot size on target	1	mm	
Minimum rms transverse spot size on target	0.25	mm	
(above assumed to be "round")			
Maximum transverse beam divergence on target	0.3	mr	any req?
Maximum length of slow spill period	600	ms	
Minimum length of slow spill period	50	ms	
Minimum duty factor	75	%	
Maximum rms microbunch length on target	50	ns	(assumed
Desired rms microbunch length on target	30	ns	Gaussian)
Minimum rms microbunch length on target	20	ns	
Maximum rms energy spread of beam on target (+/-)	100	MeV	
corresponding dE/E_max =	1.12	%	
Desired rms energy spread of beam on target	50	MeV	
corresponding dE/E_rms =	0.56	%	